09/673614
526 Rec'd PCT/PTO 19 OCT 2000

LAW OFFICES
SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
WASHINGTON, DC 20037-3213
TELEPHONE (202) 293-7060
FACSIMILE (202) 293-7860
www.sughrue.com

OIPE
OCT 19 2000
PATENT & TRADEMARK OFFICE
JC91

October 19, 2000

BOX PCT

Assistant Commissioner for Patents
Washington, D.C. 20231

PCT/FR00/00591
-filed March 10, 2000

Re: Application of Jean-Francois GRIMALDI, Jean-Marc DAUBA
A SPRING CONTACT FOR AN ELECTRICAL CONNECTOR AND A CONNECTOR INCLUDING IT
Our Ref: Q61365

Dear Sir:

The following documents and fees are submitted herewith in connection with the above application for the purpose of entering the National stage under 35 U.S.C. § 371 and in accordance with Chapter I of the Patent Cooperation Treaty:

- ☑ an executed Declaration and Power of Attorney.
- ☑ an English translation of the International Application.
- ☑ 1 sheet of formal drawings.
- ☑ a certified copy of the priority document for French Patent Application No. 9902996
- ☐ an English translation of Article 19 claim amendments.
- ☐ an English translation of Article 34 amendments (annexes to the IPER).
- ☑ an executed Assignment and PTO 1595 form.
- ☑ a Form PTO-1449 listing the ISR references, and a complete copy of each reference.
- ☑ a Preliminary Amendment

It is assumed that copies of the International Application, the International Search Report, the International Preliminary Examination Report, and any Articles 19 and 34 amendments as required by § 371(c) will be supplied directly by the International Bureau, but if further copies are needed, the undersigned can easily provide them upon request.

SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC

Assistant Commissioner of Patents
Washington, D.C. 20231
Page 2
Attorney Docket Q61365
October 19, 2000

PLEASE SEE THE ATTACHED PRELIMINARY AMENDMENT BEFORE CALCULATING THE FEE

The Government filing fee is calculated as follows:

Total claims	11	-	20	=		x $18.00	= $.00
Independent claims	2	-	3	=		x $80.00	= $.00
Base Fee							$860.00
TOTAL FILING FEE							$860.00
Recordation of Assignment							$ 40.00
TOTAL FEE							$900.00

Checks for the statutory filing fee of $860.00 and Assignment recordation fee of $40.00 are attached. You are also directed and authorized to charge or credit any difference or overpayment to said Account. The Commissioner is hereby authorized to charge any fees under 37 C.F.R. §§ 1.16, 1.17 and 1.492 which may be required during the entire pendency of the application to Deposit Account No. 19-4880. A duplicate copy of this transmittal letter is attached.

Priority is claimed from March 11, 1999, based on French Application No. 9902996.

Respectfully submitted,

David J. Cushing
Registration No. 28,703

SUGHRUE, MION, ZINN,
MACPEAK & SEAS, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, D.C. 20037-3213
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

Date: October 19, 2000

09/673614
528 Rec'd PCT/PTO 19 OCT 2000

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	PCT/FR00/00591
Jean-Francois GRIMALDI, et al.	Attorney Docket Q61365
Appln. No.:	Group Art Unit:
Filed: October 19, 2000	Examiner:

For: A SPRING CONTACT FOR AN ELECTRICAL CONNECTOR AND A CONNECTOR INCLUDING IT

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination, please amend the above-identified application as follows:

IN THE SPECIFICATION:

Page 1, after the title, insert the heading --Background of the Invention--.

Page 3, after line 17, insert the heading --Summary of the Invention--.

Page 4, after line 32, insert the heading --Brief Description of the Drawing--.

Page 5, after line 6, insert the heading --Detailed Description of the Invention--.

IN THE CLAIMS:

Claim 3, line 1, delete "preceding'";

line 2, after "claim" insert --1--.

Claim 4, line 1, delete "any preceding" and insert --1--.

Claim 7, line 1, delete "either claim 5 or claim 6" and insert --claim 5--.

Claim 8, line 1, delete "any one of claims 5 to 7" and insert --claim 5--.

Claim 9, line 1, delete "any one of claims 5 to 8" and insert --claim 5-.

Claim 10, line 1, delete "any one of claims 5 to 9" and insert -claim 1--.

Claim 11, line 1, delete "any one of claims 5 to 10" and insert --claim 5-.

IN THE ABSTRACT:

After the heading "Abstract" please delete the title.

REMARKS

Entry and consideration of this Amendment is respectfully requested.

Respectfully submitted,

David J. Cushing
Registration No. 28,703

SUGHRUE, MION, ZINN,
MACPEAK & SEAS, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, D.C. 20037-3213
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

Date: October 19, 2000

09674896 .101600

1/PRTS
09/673614
528 Rec'd PCT/PTO 19 OCT 2000

A SPRING CONTACT FOR AN ELECTRICAL CONNECTOR AND A CONNECTOR INCLUDING IT

The present invention relates to a spring contact for a small electrical connector and to a connector including it. The invention finds applications more particularly in the field of telecommunications, especially in the context of miniaturizing mobile telephones. This type of contact is generally, although not exclusively, used to interconnect a battery and a printed circuit inside a mobile telephone, in a reversible manner. More generally, this type of contact is designed for electrically interconnecting any two devices. At present, the surface of a first end of the spring contact is soldered to a printed circuit and its second end has a flexible tongue which is curved over the first end. The flexible tongue can in particular come into contact with terminals of a battery located above the connector including the contacts.

The connectors fitted into mobile telephones are generally in the form of rectangular blocks. This type of connector has housings or compartments which contain the spring contacts. These housings open onto a "lower" first face and an "upper" second face of the connector. The lower face comes into contact with the printed circuit and the upper face comes into contact with the battery. A generally U-shaped spring contact inserted into the housing has two branches or arms and a base or bend of the U-shape interconnects the two branches at one end. The base of the U-shape is in the shape of a circular arc and lies in a plane perpendicular to the planes of the first and second faces of the connector. Each branch is adapted to make electrical contact with a device.

The first branch of the U-shape is fixed, for example soldered, to a printed circuit in contact with the first face of the connector. The second branch forms a boss projecting from the second face of the connector.

The total height of the U-shape is made up of three heights added together. These three heights are defined by the shortest distances between two planes parallel to the plane of the printed circuit and containing points of the spring contact. A first of these three heights is the distance between the point where the first branch is soldered to the printed circuit and the point where the first branch joins the base. A second of these three heights is equal to a chord of the base corresponding to the distance between the two end points of the circular arc. A third of these three heights is the distance between a point on the second branch which is the highest point relative to the base and a point of contact between the second branch and the base. The thickness of the connector is defined by the shortest distance between the first face and the second face and, because the spring contact is intended to be partly depressed within the housing of the connector when it is loaded, is less than the total height of the contact. One example of a connector of the above kind is 3.2 millimeters thick.

The current trend to miniaturization of electronic devices, such as mobile telephones, makes it necessary to reduce the size of the various components of such devices. In particular, connectors included in such devices must be small, for example with a thickness of up to 1.8 millimeters and other dimensions in the usual proportions.

In the prior art, reducing the thickness of the connectors and the total height of the spring contacts that they contain is possible only at the cost of a significant increase in the width or length of the connectors and the contacts. This is because the structure of existing spring contacts means that their total height can be reduced only by altering the first and third of the aforementioned three heights. To retain the technical characteristics of the contacts, reducing the first and third of these heights entails thickening

or widening the contact leaf springs, in particular the leaf spring of the second branch. Widening the contact leaf springs widens the connector overall. Thus the overall volume of the connector cannot be reduced. The structure of existing spring contacts therefore makes miniaturizing such connectors a problem.

To mount it on the surface of a printed circuit, this type of connector is picked up by suction pipettes. These pipettes must come into contact only with areas of the connector where are there no spring contacts. The provision of an area of this kind, which is generally in a central position on this type of connector, necessarily implies an increase in the width of the connector. Consequently, this type of connector is currently picked up by two pipettes, one at each end of the connector. This represents another problem with manipulating prior art connectors.

The object of the invention is to remedy the cited problems by proposing a spring contact, for use in a connector, which is substantially U-shaped and has two branches and a base joining the two branches together at one end, each branch being adapted to make electrical contact with a device.

According to the invention, the two branches lie in two diverging planes and the intersection of said two planes is within the base of the U-shape.

The spring contact then has a total height which is less than that of the prior art spring contact.

To reduce further the total height of the contact, one branch and the base of the U-shape are coplanar.

Furthermore, to simplify connection, the electrical contact of at least one branch is at the free end of said branch.

In a second aspect, the invention provides an electrical connector having a first face and a second face opposite the first face, the connector including at least one housing for receiving a spring contact of the

invention. The housing opens onto both faces of the connector and the spring contact is positioned in the housing so that the plane containing the base of the U-shape is substantially parallel to the plane of the faces of the connector.

The base joining the first and second branches is inside the housing. It has a plane of curvature which is substantially parallel to the first and second faces. Increasing the width of the spring contact implies a small increase in the width of the connector. This is because the contacts are disposed so that the first branches of the contacts on the first face are aligned with the spaces between the second branches on the second face. This reduces the overall volume of the connector, which has previously been impossible.

The connector includes means for guiding the spring contact into the correct position in the housing.

It also includes retaining means for maintaining this correct position.

If it is necessary to use a plurality of connections, the connector includes a plurality of housings receiving respective U-shaped spring contacts.

To keep the volume of the connector sufficiently small, the spring contacts in two adjacent housings are positioned so that they are substantially parallel but the opposite way round, one branch of one contact being adjacent the other branch of the adjacent contact.

The branches of the spring contacts are arranged to produce an area with no spring contacts in the middle of the second face. A suction pipette can be applied to this area. The connector can therefore be picked up by a single pipette.

The invention will be better understood on reading the following description and examining the accompanying drawing. In the drawing, which is given entirely by way of non-limiting and illustrative example of the invention:

- Figure 1 is a perspective view of a connector of the invention,

- Figure 2 is a perspective view of a spring contact of the invention, and

- Figure 3 is a view of the face of the connector of the invention that cannot be seen in Figure 1.

The connector of the invention has a body 1 which has a first face 2 (seen in Figure 1) opposite from a second face 3 (seen in Figure 3) in respective planes 2.1 and 3.1. The body 1 has housings 4 opening into both faces. Thus a housing 4 has a first entry 5 opening into the first face 2 and a second entry 6 opening into the second face 3. The two entries 5 and 6 are separated by a wall 4.1. The connector includes spring contacts 7, each in a respective housing 4. The body 1 has thickness 8. The thickness 8 is preferably not greater than 1.8 mm. The body 1 has width 9 and length 10. In the example shown, the body 1 has four housings 4 containing four spring contacts 7. In this case, the width 9 is preferably equal to 8.3 mm and the length 10 is preferably equal to 15.3 mm. However, the connector of the invention can have any number of housings each containing a spring contact. The dimensions can be adapted to suit the required number of spring contacts or the required technical characteristics.

The spring contact 7 has a first branch 11 in a plane 11.1 and a second branch 12 in a plane 12.1. The first branch 11 and the second branch 12 are joined by a base 13. The two branches are adapted to make electrical contact with an equipment unit such as a battery or a printed circuit. In the case of mobile telephones, one branch of the contact, here the branch 11, can be permanently fixed to the printed circuit, the battery coming into contact with the other branch, here the branch 12. Once the contact has been mounted in the connector, the base 13 has a plane of curvature 13.1 which is parallel to the two planes 2.1 and 3.1 defined

by the first and second faces. However, it can instead be oblique to those planes. In this case, the expression "plane of curvature" refers to the plane into which the curvature is projected along an axis perpendicular to the first and second faces.

In the invention, the two branches 11 and 12 are in respective divergent planes 11.1 and 12.1 and the intersection I of the two planes is within the base 13 of the U-shape.

Also, in the example shown, the plane 11.1 of the branch 11 and the plane 13.1 are substantially coincident.

The first branch 11 is rectangular with two bayonet-type offsets or steps 14 and 15. The two steps 14 and 15 define three portions of the first branch 11. A first portion 16 consists of the end of the first branch 11. The end 16 is a free end adapted to be connected, and in particular soldered, to a printed circuit. A second portion 17 between the steps 14 and 15 is a plane portion. The portion 17 is adapted to be retained in the housing 4 of the body 1. A third portion 18 is defined between the step 15 and the base 13. The portion 18 is mobile in a plane orthogonal to the plane formed by the portion 17. The portion 18 is mobile relative to the portion 17 by virtue of a hinge formed by the step 15. The step 15 also stiffens the branch 11.

The second branch 12 includes a first area 19 forming a shoulder and a nose 20. A first portion 21 of the second branch 12 is defined between the area 19 and the nose 20. The area 19 hinges the portion 21 relative to the plane of curvature 13.1. The first portion 21 is plane and rectangular. In the example shown, the nose 20 and the portion 21 are adapted to come into contact with one terminal of a battery held against the branch 12 projecting from the second face 3. The nose 20 separates the first portion 21 from a second portion 22 of the second branch 12 by forming a projecting corner such that

the second portion 22 is slightly curved under the first portion 21. The portions 21 and 22 of the second branch 12 are mobile relative to the base 13 in a plane perpendicular to the plane of curvature 13.1. The branch 12 is also mobile in a plane separate from but parallel to the plane in which the branch 11 moves.

The total height of the spring contact 7 is made up a first height equal to the height of the first branch 11 plus a second height equal to the height of the second branch 12. This is because the height of the base is virtually zero, since it is equal to the thickness of the leaf spring constituting the spring contact. The two heights are defined in absolute terms by the shortest distance between two planes parallel to the plane 13.1. The first height is equal to the sum of a height 23 corresponding to the height of the end 16, a height 24 corresponding to the height of the step 14 and a height 25 corresponding to the height of the step 15. The second height is equal to the height 26 of the first portion 21.

The second portion 22 has a height 27. The height 27 is made as large as possible so that the second branch 12 does not exit completely from the body 1. In a different example, the portion 22 could have lugs at one end for retaining it in the second entry 6.

As shown in Figure 1, the spring contact 7 is retained in the housing 4 of the body 1 by retaining means which include lugs 28 holding the portion 17 pressed against a rim 29 of the first entry 5. The lugs 28 are drops of plastics material melted onto the spring contact 7 after it is positioned in the housing 4, for example. The spring contact 7 is inserted into the body 1 via the first entry 5 on the first face 4. The size of the first entry 5 is such that it allows all of the spring contact 7 to pass through it. In contrast, the second entry 6 allows only the second branch 12 of the spring contact 7 to pass through it. The branch 11 is

retained in the first entry 5 by the wall 4.1. The housing 4 therefore includes a hole leading from the first entry 5 to the second entry 6 whose cross-section is restricted to the size of the aperture of the second entry 6. When an object, for example a battery, is pressed against the second face 3 of the body 1, and therefore against the branch 12 of the spring contacts 7, the branch 12 is depressed, the height 26 is reduced and the portion 22 is depressed into the housing 4. In one example, the maximum travel of the branch 12 is 1.5 mm. The object pressed against the second face 3 must exert a force lying in the range 0.5 newtons (N) to 1.5 N to depress the branch 12 into its housing 4.

The connector has an axis of symmetry 30 orthogonal to the first and second faces 2 and 3 and passing through the center of each of them. The axis of symmetry 30 is a feature associated with the number of spring contacts 7 including in the body 1, and is present only if the connector includes an even number of spring contacts 7.

If several points of contact are required, the connector includes several housings, for example housings 4a, 4b, receiving respective spring contacts 7a, 7b. The contacts are substantially parallel but the opposite way round relative to each other, a branch 11a of one contact 7a being adjacent a branch 12b of the adjacent contact 7b.

The contacts are arranged relative to each other in the body 1 to distribute the steps 20 alternately over the second face 3. This homogenizes the distribution of the ends 16 on either side of the first face 2. The spring contacts 7 are side by side in the body 1. The space between two successive branches 12 on the second face 3 overlies the location on the first face 2 of a branch 11 connected to one of the two branches 12. The position of the ends 16 alternates from one contact 7 to the next. The ends 16 project either from a first side 31 of the first face 2 or from a second side 32 of the

first face 2 opposite the first side 31. Both sides 31 and 32 of the connector are therefore fixed to the printed circuit. Because the connector is therefore fixed more firmly, it is not necessary to provide additional soldered joints to guarantee mechanical location of the connector.

To free up an area 33 on the second face 3 sufficient for a pipette, the spring contacts 7 are disposed in a particular manner. The area 33 is required to be centrally located. It enables the connector to be picked up by a single pipette having a diameter of at least 2.5 mm.

The connector further includes recesses or cavities 34. The cavities 34 are formed in two lateral faces 35 and 36 of the respective sides 31 and 32 of the connector 1 and in such a way that the free ends 16 of the spring contacts 7 inserted into the body 1 project from the sides 31 and 32 via the cavities 34. The ends 16 are therefore visible from the side of the second surface 3 for soldering them. This facilitates soldering the ends 16 to a printed circuit.

CLAIMS

1. A spring contact for use in a connector, which spring contact is substantially U-shaped and has two branches (11, 12) and a base (13) joining the two branches at one end, each branch being adapted to make electrical contact with a device, characterized in that the two branches (11, 12) lie in two diverging planes (11.1, 12.1) and the intersection (I) of said two planes is within the base (13) of the U-shape.

2. A spring contact according to claim 1, characterized in that one branch (11) and the base (13) are coplanar.

3. A spring contact according to either preceding claim, characterized in that the electrical contact of at least one branch (11) is at the free end (16) of said branch.

4. A spring contact according to any preceding claim, characterized in that one branch (11) is adapted to come into contact with a printed circuit and the other branch (12) is adapted to come into contact with a battery.

5. An electrical connector having a first face (2) and a second face (3) opposite the first face, the connector including at least one housing (4) for receiving a spring contact (7) according to any preceding claim and opening onto both faces, characterized in that the spring contact is positioned in the housing so that the plane (13.1) containing the base (13) of the U-shape is substantially parallel to the respective planes (2.1, 3.1) of the faces (2, 3) of the connector.

6. A connector according to claim 5, characterized in that it includes means (4.1) for guiding the spring contact (7) into position in the housing (4).

09623454.040600

7. A connector according to either claim 5 or claim 6, characterized in that it includes means (28, 29) for retaining the spring contact (7) in the housing (4).

8. A connector according to any one of claims 5 to 7, characterized in that one branch (12) of the spring contact (7) projects from the housing (4).

9. A connector according to any one of claims 5 to 8, including a plurality of housings (4a, 4b) each receiving a respective spring contact (7a, 7b) according to any of claims 1 to 4, characterized in that the spring contacts (7a, 7b) in two adjacent housings (4a, 4b) are positioned so that they are substantially parallel but the opposite way round to each other, one branch (11a) of one contact (7a) being adjacent the other branch (12b) of the adjacent contact (7b).

10. A connector according to any one of claims 5 to 9, characterized in that one face (3) of the connector has a pick-up area (33) substantially at the center of said face (3).

11. A connector according to any one of claims 5 to 10, having lateral faces (35, 36) joining the first and second faces (2, 3), characterized in that the lateral faces (35, 36) include at least one recess (34) and a free end (16) of one branch (11) of the spring contact (7) projects into said recess (34).

A B S T R A C T

A SPRING CONTACT FOR AN ELECTRICAL CONNECTOR AND A CONNECTOR INCLUDING IT

The invention relates to a spring contact for use in a connector, which spring contact is substantially U-shaped and has two branches (11, 12) and a base (13) joining the two branches at one end, each branch being adapted to make electrical contact with a device, characterized in that the two branches (11, 12) lie in two diverging planes (11.1, 12.1) and the intersection (I) of said two planes is within the base (13) of the U-shape. It also relates to a connector including such a contact.

Document Page 12 of 12

Translation of the title and the abstract as they were when originally filed by the Applicant. No account has been taken of any changes that may have been made subsequently by the PCT Authorities acting ex officio, e.g. under PCT Rules 37.2, 38.2, and/or 48.3.

09/673614

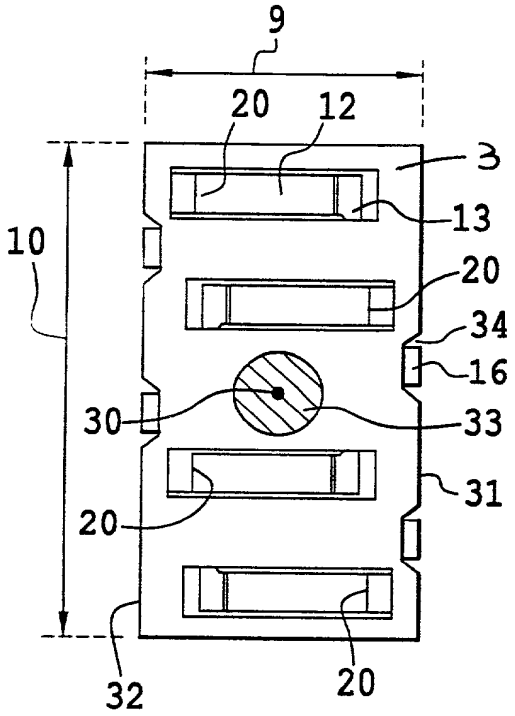

Fig. 3

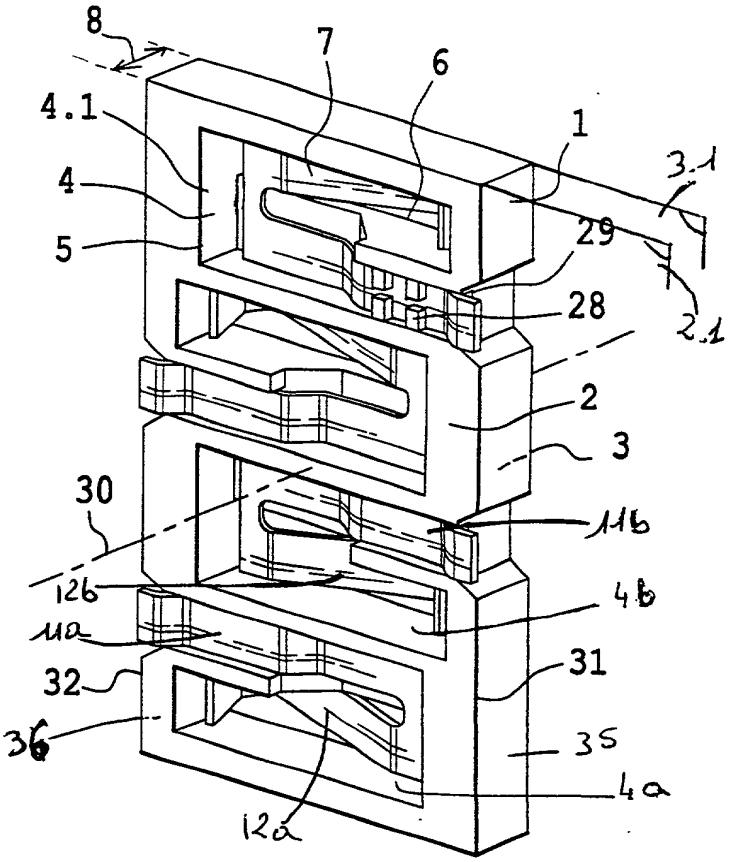

Fig. 1

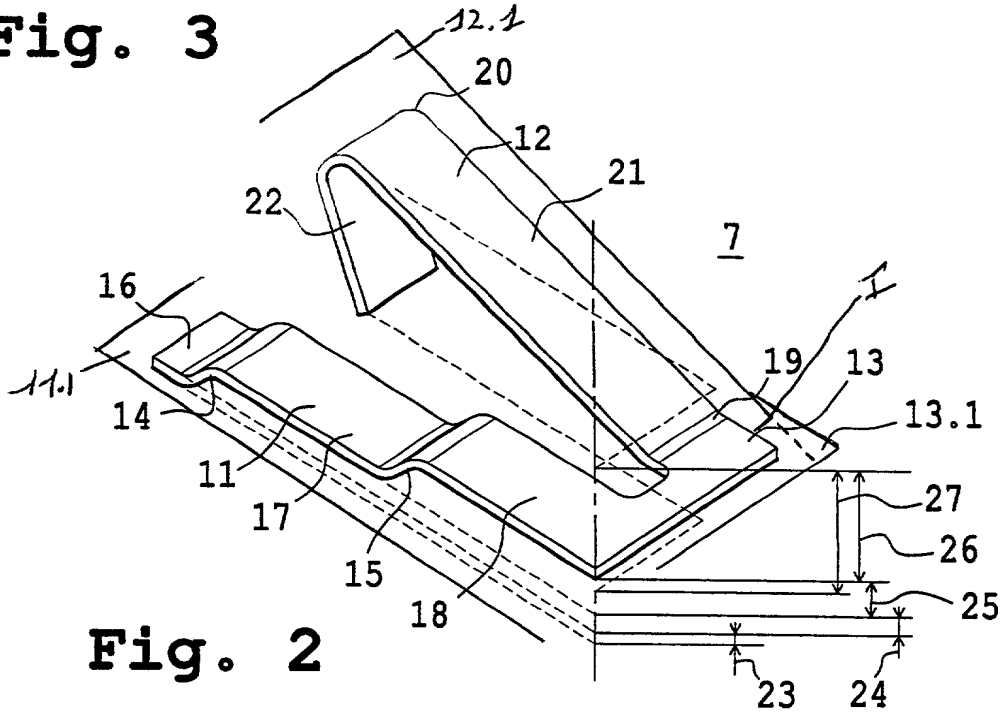

Fig. 2

Declaration and Power of Attorney for Patent Application

Déclaration et Pouvoirs pour Demande de Brevet

French Language Declaration

En tant que l'inventeur nommé ci-après, je déclare par le présent acte que:

As a below named inventor, I hereby declare that:

Mon domicile, mon adresse postale et ma nationalité sont ceux figurant ci-dessous à côté de mon nom.

My residence, post office address and citizenship are as stated next to my name.

Je crois être le premier inventeur original et unique (si un seul nom est mentionné ci-dessous), ou l'un des premiers co-inventeurs originaux (si plusieurs noms sont mentionnés ci-dessous) de l'objet revendiqué, pour lequel une demande de brevet a été déposée concernant l'invention de la description identifiée par le numéro de référence

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention in the specification identified by Docket No.

102140/CLF/PCD

Je déclare par le présent acte avoir passé en revue et compris le contenu de la description ci-dessus, revendications comprises.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims.

Je reconnais devoir divulguer toute information pertinente à la brevetabilité, comme défini dans le Titre 37, § 1.56 du Code fédéral des réglementations.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

Je revendique par le présent acte avoir la priorité étrangère, en vertu du Titre 35, § 119(a)-(d) ou § 365(b) du Code des Etats-Unis, sur toute demande étrangère de brevet ou certificat d'inventeur ou, en vertu du Titre 35, § 365(a) du même Code, sur toute demande internationale PCT désignant au moins un pays autre que les Etats-Unis et figurant ci-dessous et, j'ai aussi indiqué ci-dessous toute demande étrangère de brevet, tout certificat d'inventeur ou toute demande internationale PCT ayant une date de dépôt précédant celle de la demande à propos de laquelle une priorité est revendiquée.

I hereby claim foreign priority under Title 35, United States Code, § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, listed below, and have also identified below any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Prior foreign application(s) for which priority is claimed
Demande(s) de brevet étrangère(s) antérieure(s) dont la priorité est revendiquée

(Number) (Numéro)	(Country) (Pays)	(Day/Month/Year Filed) (Jour/Mois/Année de dépôt)
99 02 996	**FRANCE**	**11 MARCH 1999**

Prior foreign applications for which priority is not claimed
Demande(s) de brevet étrangères antérieure(s) dont la priorité n'est pas revendiquée

(Number) (Numéro)	(Country) (Pays)	(Day/Month/Year Filed) (Jour/Mois/Année de dépôt)

French Language Declaration

Je revendique par le présent acte tout bénéfice, en vertu du Titre 35, § 119(e) du Code des Etats-Unis, de toute demande de brevet provisoire effectuée aux Etats-Unis et figurant ci-dessous.

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

(Application No.)
(No de demande)

(Filing Date)
(Date de dépôt)

Je revendique par le présent acte tout bénéfice, en vertu du Titre 35, § 120 du Code des Etats-Unis, de toute demande de brevet effectuée aux Etats-Unis, ou en vertu du Titre 35, § 365(c) du même Code, de toute demande internationale PCT désignant les Etats-Unis et figurant ci-dessous et, dans la mesure où l'objet de chacune des revendications de cette demande de brevet n'est pas divulgué dans la demande antérieure américaine ou internationale PCT, en vertu des dispositions du premier paragraphe du Titre 35, § 112 du Code des Etats-Unis, je reconnais devoir divulguer toute information pertinente à la brevetabilité, comme défini dans le Titre 37, § 1.56 du Code fédéral des réglementations, dont j'ai pu disposer entre la date de dépôt de la demande antérieure et la date de dépôt de la demande nationale ou internationale PCT de la présente demande.

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

(Application No.) (N0 de demande)	(Filing Date) (Date de dépôt)	(Status)(patented, pending, abandoned) (Statut)(breveté, en cours d'examen, abandonné)

Je déclare par le présent acte que toute déclaration ci-incluse est, à ma connaissance, véridique et que toute déclaration formulée à partir de renseignements ou de suppositions est tenue pour véridique; et de plus, que toutes ces déclarations ont été formulées en sachant que toute fausse déclaration volontaire ou son équivalent est passible d'une amende ou d'une incarcération, ou des deux, en vertu de la Section 1001 du Titre 18 du Code des Etats-Unis, et que de telles déclarations volontairement fausses risquent de compromettre la validité de la demande de brevet ou du brevet délivré à partir de celle-ci.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

French Language Declaration

POUVOIRS: En tant que l'inventeur cité, je désigne par la présente l'(les) avocat(s) et/ou agent(s) suivant(s) pour qu'ils poursuive(nt) la procédure de cette demande de brevet et traite(nt) toute affaire s'y rapportant avec l'Office des brevets et des marques: (mentionner le nom et le numéro d'enregistrement).

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: (list name and registration number)

30

John H. Mion, Reg. No. 18,879; Thomas J. Macpeak, Reg. No. 19,292; Robert J. Seas, Jr., Reg. No. 21,092; Darryl Mexic, Reg. No. 23,063, Robert V. Sloan, Reg. No. 22,775; Peter D. Olexy, Reg. No. 24,513; J. Frank Osha, Reg. No. 24,625; Waddell A. Biggart, Reg. No. 24,861; Louis Gubinsky, Reg. No. 24,835; Neil B. Siegel, Reg. No. 25,200; David J. Cushing, Reg. No. 28,703; John R. Inge, Reg. No. 26,916; Joseph J. Ruch, Jr., Reg. No. 26,577; Sheldon I. Landsman, Reg. No. 25,430; Richard C. Turner, Reg. No. 29,710; Howard L. Bernstein, Reg. No. 25,665; Alan J. Kasper, Reg. No. 25,426; Kenneth J. Burchfiel, Reg. No. 31,333; Gordon Kit, Reg. No. 30,764; Susan J. Mack, Reg. No. 30,951; Frank L. Bernstein, Reg. No. 31,484; Mark Boland, Reg. No. 32,197; William H. Mandir, Reg. No. 32,156; Scott M. Daniels, Reg. No. 32,562; Brian W. Hannon, Reg. No. 32,778; Abraham J. Rosner, Reg. No. 33,276; Bruce E. Kramer, Reg. No. 33,725; Paul F. Neils, Reg. No. 33,102; and Brett S. Sylvester, Reg. No. 32,765; and Robert M. Masters, Reg. No. 35,603.

Adresser toute correspondance à:

Send Correspondence to:
SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC
2100 Pennsylvania Avenue, N.W., Suite 800
Washington, D.C. 20037-3213

Nom complet de l'unique ou premier inventeur	Full name of sole or first inventor (First Middle Last) **Jean-François GRIMALDI**
Signature de l'inventeur Date	Inventor's signature Date 20/09/00
Domicile	Residence PARIS - FRANCE FRX
Nationalité	Citizenship French
Adresse postale	Post Office Address 11 rue de JAVEL 75015 PARIS FRANCE
Nom complet du second co-inventeur, le cas échéant	Full name of second joint inventor, if any (First Middle Last) **Jean-Marc DAUBA**
Signature du second inventeur Date	Second inventor's signature Date 21/09/00
Domicile	Residence LA GARENNE COLOMBES - FRANCE FRX
Nationalité	Citizenship French
Adresse postale	Post Office Address 10 avenue Augustine 92250 LA GARENNE COLOMBES FRANCE

(Fournir les mêmes renseignements et la signature de tout co-inventeur supplémentaire.)

(Supply similar information and signature for third and subsequent joint inventors.)